Package ‘descr’

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Encoding UTF-8
Imports xtable
Description This package contains functions to describe weighted
categorical variables and functions to facilitate the character
coding conversion of objects.
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Means of a numerical vector according to a factor

Calculates the means of a numerical vector according to a factor.

Usage

```r
compmeans(x, f, w, sort = FALSE, maxlevels = 60,
user.missing, missing.include = FALSE,
plot =getOption("descr.plot"),
relative.widths = TRUE, col = "lightgray",
warn =getOption("descr.warn"), ...)
```

Arguments

- `x` A numeric vector.
- `f` A factor.
- `w` Optional vector with weights.
- `sort` If TRUE, sorts the lines by the means values.
- `maxlevels` Maximum number of levels that `x` converted into factor should have.
- `user.missing` Character vector, indicating what levels of `f` must be treated as missing values.
- `missing.include` If TRUE, then NA values, if present in `f`, are included as level "NA". You can change the new level label by setting the value of descr.na.replacement option. Example: options(descr.na.replacement = "Missing").
- `plot` Logical: if TRUE (default), a boxplot is produced. You may put options(descr.plot = FALSE)
in your `.Rprofile` to change the default function behavior.
- `relative.widths` If TRUE, the boxes widths will be proportional to the number of elements in each level of `f`.
- `col` Vector with the boxes colors.
- `warn` Warn if conversion from factor into numeric or from numeric into factor was performed and if missing values were dropped (default: TRUE).
- `...` Further arguments to be passed to either `boxplot` (if `w` is missing) or `bxp` (for `w` weighted boxplot).
Value

A matrix with class c("matrix", "meanscomp") with labels attributes for x and f. The returned object can be plotted, generating a boxplot of x grouped by f.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>, with code for weighted boxplots written by Stefan Kraft for simPopulation package.

See Also

boxplot.

Examples

sex <- factor(c(rep("F", 900), rep("M", 900)))
income <- 100 * (rnorm(1800) + 5)
weight <- rep(1, 1800)
weight[sex == "F" & income > 500] <- 3
attr(income, "label") <- "Income"
attr(sex, "label") <- "Sex"
compmeans(income, sex, col = "lightgray", ylab = "income", xlab = "sex")
comp <- compmeans(income, sex, weight, plot = FALSE)
plot(comp, col = c("pink", "lightblue"), ylab = "income", xlab = "sex")

## Not run:
library(xtable)
# If the decimal separator in your country is a comma:
# options(OutDec = ",")
print(xtable(comp, caption = "Income according to sex", label = "tab:incsx"))

## End(Not run)
dnn = NULL, xlab = NULL, ylab = NULL, main = "", user.missing.x, user.missing.y, plot = getOption("descr.plot"), ...)

Arguments

- **x, y** Vectors in a matrix or a dataframe.
- **weight** An optional vector for a weighted cross tabulation.
- **digits** See `CrossTable`.
- **max.width** See `CrossTable`.
- **expected** See `CrossTable`.
- **prop.r** See `CrossTable`.
- **prop.c** See `CrossTable`.
- **prop.t** See `CrossTable`.
- **prop.chisq** See `CrossTable`.
- **chisq** See `CrossTable`.
- **fisher** See `CrossTable`.
- **mcnemar** See `CrossTable`.
- **resid** See `CrossTable`.
- **sresid** See `CrossTable`.
- **asresid** See `CrossTable`.
- **missing.include**
- **drop.levels** See `CrossTable`.
- **format** See `CrossTable`.
- **cell.layout** See `CrossTable`.
- **dnn** See `CrossTable`.
- **xlab** See `CrossTable`.
- **ylab** See `CrossTable`.
- **main** An overall title for the plot (see `title`).
- **user.missing.x** An optional character vector with the levels of x that should be treated as missing values.
- **user.missing.y** An optional character vector with the levels of y that should be treated as missing values.
- **plot** Logical: if TRUE (default), a mosaic plot is produced. You may put options(descr.plot = FALSE) in your `.Rprofile` to change the default function behavior.

... Further arguments to be passed to `mosaicplot`. 


Details

crosstab invokes the CrossTable with all boolean options set to FALSE and "SPSS" as the default format option. The returned CrossTable object can be plotted as a mosaicplot. Note that the gray scale colors used by default in the mosaic plot do not have any statistical meaning. The colors are used only to ease the plot interpretation.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>

See Also

CrossTable, plot.CrossTable, xtable.CrossTable.

Examples

```r
educ <- sample(c(1, 2), 200, replace = TRUE, prob = c(0.3, 0.7))
educ <- factor(educ, levels = c(1, 2), labels = c("Low", "High"))
income <- sample(c(1, 2, 3), 200, replace = TRUE,
                 prob = c(0.3, 0.4, 0.3))
income <- factor(income, levels = c(1, 2, 3),
                 labels = c("Low", "Middle", "High"))
attr(educ, "label") <- "Education level"
attr(income, "label") <- "Income level"
w <- sample(c(10, 15, 19), 200, replace = TRUE)

crosstab(income, educ, xlab = "Income", ylab = "Education")
ct <- crosstab(income, educ, w, dnn = c("Income", "Education"),
               expected = TRUE, plot = FALSE)
ct
plot(ct, inv.y = TRUE)
## Not run:
library(xtable)
print(xtable(ct))

# Add to the preamble of your Rnweb document:
# \usepackage{booktabs}
# \usepackage{multirow}
print(xtable(ct, decimal.mark = ",", multirow = TRUE, hline = TRUE),
      booktabs = TRUE, include.rownames = FALSE,
      sanitize.text.function = function(x) x)
## End(Not run)
```

CrossTable

Cross tabulation with tests for factor independence
**Description**

An implementation of a cross-tabulation function with output similar to S-Plus crosstabs() and SAS Proc Freq (or SPSS format) with Chi-square, Fisher and McNemar tests of the independence of all table factors.

**Usage**

```r
CrossTable(x, y, digits = 3, max.width = NA, expected = FALSE,
prop.r = TRUE, prop.c = TRUE, prop.t = TRUE,
prop.chisq = TRUE, chisq = FALSE, fisher = FALSE,
mcnemar = FALSE, resid = FALSE, sresid = FALSE,
asresid = FALSE, missing.include = FALSE,
drop.levels = TRUE, format = c("SAS","SPSS"), dnn = NULL,
cell.layout = TRUE, xlab = NULL, ylab = NULL, ...) 
```

**Arguments**

- **x** A vector or a matrix. If y is specified, x must be a vector.
- **y** A vector in a matrix or a dataframe.
- **digits** Number of digits after the decimal point for cell proportions.
- **max.width** In the case of a 1 x n table, the default will be to print the output horizontally. If the number of columns exceeds max.width, the table will be wrapped for each successive increment of max.width columns. If you want a single column vertical table, set max.width to 1.
- **prop.r** If TRUE, row proportions will be included.
- **prop.c** If TRUE, column proportions will be included.
- **prop.t** If TRUE, table proportions will be included.
- **expected** If TRUE, expected cell counts from the \( \chi^2 \) will be included.
- **prop.chisq** If TRUE, chi-square contribution of each cell will be included.
- **chisq** If TRUE, the results of a chi-square test will be printed after the table.
- **fisher** If TRUE, the results of a Fisher Exact test will be printed after the table.
- **mcnemar** If TRUE, the results of a McNemar test will be printed after the table.
- **resid** If TRUE, residual (Pearson) will be included.
- **sresid** If TRUE, standardized residual will be included.
- **asresid** If TRUE, adjusted standardized residual will be included.
- **missing.include** If TRUE, then NA values, if present, are included as level "NA" of both x and y. You can change the new level label by setting the value of descr.na.replacement option. Example: options(descr.na.replacement = "Missing").
- **drop.levels** If TRUE, then remove any unused factor levels.
- **format** Either SAS (default) or SPSS, depending on the type of output desired.
- **dnn** The names to be given to the dimensions in the result (the dimnames names).
- **cell.layout** If TRUE, print the cell layout.
CrossTable

xlab A title for the x axis when plotting the CrossTable object (see title). If missing, dnn[1] is used if not NULL.

ylab A title for the y axis when plotting the CrossTable object (see title). If missing, dnn[2] is used if not NULL.

... Optional arguments passed to chisq.test.

Details

A summary table will be generated with cell row, column and table proportions and marginal totals and proportions. Expected cell counts can be printed if desired. In the case of a 2 x 2 table, both corrected and uncorrected values will be included for appropriate tests. In the case of tabulating a single vector, cell counts and table proportions will be printed.

Note 1: If 'x' is a vector and 'y' is not specified, no statistical tests will be performed, even if any are set to TRUE.

Note 2: 'x' and 'y' labels will be truncated if the table is not going to fit to the screen, according to the value of getOption("width").

Value

A list of class CrossTable containing parameters used by the print.CrossTable method and the following components:

t: An n by m matrix containing table cell counts.

prop.row: An n by m matrix containing cell row proportions.

prop.col: An n by m matrix containing cell column proportions.

prop.tbl: An n by m matrix containing cell table proportions.

chisq: Results from the Chi-Square test. A list with class 'htest'. See chisq.test for details.

chisq.corr: Results from the corrected Chi-Square test. A list with class 'htest'. See chisq.test for details. ONLY included in the case of a 2 x 2 table.

fisher.ts: Results from the two-sided Fisher Exact test. A list with class 'htest'. See fisher.test for details. ONLY included if 'fisher' = TRUE.

fisher.lt: Results from the Fisher Exact test with HA = "less". A list with class 'htest'. See fisher.test for details. ONLY included if 'fisher' = TRUE and in the case of a 2 x 2 table.

fisher.gt: Results from the Fisher Exact test with HA = "greater". A list with class 'htest'. See fisher.test for details. ONLY included if 'fisher' = TRUE and in the case of a 2 x 2 table.

mcnemar: Results from the McNemar test. A list with class 'htest'. See mcnemar.test for details. ONLY included if 'mcnemar' = TRUE.

mcnemar.corr: Results from the corrected McNemar test. A list with class 'htest'. See mcnemar.test for details. ONLY included if 'mcnemar' = TRUE and in the case of a 2 x 2 table.

resid/sresid/asresid: Pearson Residuals (from chi-square tests).
Author(s)

Jakson Aquino <jalvesaq@gmail.com> has split the function CrossTable (from the package gmodels) in two: CrossTable and print.CrossTable. The gmodels’s function was developed by Marc Schwartz (original version posted to r-devel on Jul 27, 2002. SPSS format modifications added by Nitin Jain based upon code provided by Dirk Enzmann).

See Also

plot.CrossTable, forODF, table, prop.table, xtabs, crosstab.

Examples

# Simple cross tabulation of education versus prior induced abortions using infertility data
data(warpbreaks, package = "datasets")
ct <- CrossTable(warpbreaks$wool, warpbreaks$tension, 
dnn = c("Wool", "Tension"))
plot(ct)
print(ct)

Description

Export a data.frame to a tab delimited text and create R and SPSS/PSPP scripts to input the data again.

Usage

data.frame2txt(x = , datafile = "x.txt", r.codefile = "x.R", 
sps.codefile = "x.sps", df.name = "x", 
user.missing)

Arguments

x The data.frame to be exported.
datafile The name of the tab delimited file to be created.
r.codefile The name of the R script to read the data file.
sps.codefile The name of the SPSS/PSPP script to read the data file.
user.missing The name of the data.frame object to be created by the R script.

Value

The return value of write.table.
Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>

Examples

data(CO2)
data.frame2txt(CO2)

descr Summary of an object

Description

Wrapper for the function summary of base package, including information about variable label. The function prints the label attribute of the object and, then, invokes summary(object). If the object is a data frame, the function prints the label and invokes summary for each variable in the data frame.

Usage

descr(x)

Arguments

x The object to be described.

Value

Null.

Author(s)

Jakson Aquino <jalvesaq@gmail.com>

See Also

summary
file.head

*Prints first lines of a file.*

**Description**

The function prints the first lines of a file, optionally truncating the lines according to the screen width. The lines are truncated at `getOption("width") - 2`.

**Usage**

```r
guide(head(file, n, truncate.cols = TRUE)
```

**Arguments**

- **file**: Character: The name of the file whose first lines should be printed.
- **n**: The number of lines to show.
- **truncate.cols**: Logical: if TRUE truncate the lines.

**Value**

NULL.

**Author(s)**

Jakson A. Aquino <jalvesaq@gmail.com>

---

**forODFTable**

*Convert an object of class CrossTable into a matrix for odfTable*

**Description**

The function converts an object of class CrossTable into a matrix to be printed by `odfTable()` of *odfWeave* package.

**Usage**

```r
forODFTable(x, digits = 1, ...)
```

**Arguments**

- **x**: A object of class ‘CrossTable’.
- **digits**: See `round`.
- **...**: Optional arguments passed to `format`.
freq

Value
A matrix.

Author(s)
Jakson A. Aquino <jalvesaq@gmail.com>.

See Also
CrossTable

Examples
```r
## Not run:
library(odfWeave)
data(infert, package = "datasets")
x <- crosstab(infert$education, infert$induced, expected = TRUE)

# Use the function directly:
odfTable(odfTable(x))

# Create a method for odfTable:
odfTable.CrossTable <- function(x) odfTable(odfTable(x))
odfTable(x)
methods(odfTable)

## End(Not run)
```

---

freq Frequency table

Description
Prints a frequency table of the selected object. Optionally, the frequency might be weighted.

Usage
```
freq(x, w, user.missing, plot =getOption("descr.plot"), ...)
```

Arguments
```
x          The factor from which the frequency of values is desired.
w          An optional vector for a weighted frequency table.
user.missing Character vector, indicating what levels must be treated as missing values while calculating valid percents. Levels representing user missing values are not shown in the barplot.
```
plot Logical: if TRUE (default), a barplot is produced. You may put
options(descr.plot = FALSE)
in your `.Rprofile` to change the default function behavior.

... Further arguments to be passed to `plot.freqtable` if plot = TRUE.

Details

A column with cumulative percents are added to the frequency table if x is an ordered factor.

Value

A matrix with class c("matrix", "freqtable") with the attribute "xlab" which is a character string corresponding to either the attribute "label" of x or, if x does not have this attribute, the name of x. The returned object can be plotted, generating a barplot.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>, based on function written by Dirk Enzmann

Examples

```r
x <- c(rep(1, 100), rep(2, 120), rep(3, 10), rep(NA, 12))
w <- c(rep(1.1, 122), rep(0.9, 120))
x <- factor(x, levels = c(1, 2, 3),
            labels = c("No", "Yes", "No answer"))
attr(x, "label") <- "Do you agree?"

d xuyên x, y.axis = "percent"
f <- freq(x, w, user.missing = "No answer", plot = FALSE)
plot(f)
## Not run:
# If the decimal separator in your country is a comma:
# options(OutDec = ",")
print(xtable(f))
## End(Not run)
```

Conversion from UTF-8 encoding

Description

Converts the encoding of some attributes of an object from UTF-8 into other encoding.

Usage

```r
fromUTF8(x, to = "WINDOWS-1252")
```
Arguments

x A R object, usually a variable of a data frame or a data frame.
to A string indicating the desired encoding. Common values are "LATIN1" and "WINDOWS-1252". Type iconvlist() for the complete list of available encodings.

Details

The function converts the attribute label of x from UTF-8 into the specified encoding. If x is a factor, the levels are converted as well. If x is a data.frame, the function makes the conversions in all of its variables.

Value

The object with its label and levels converted.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>.

See Also

iconv

---

fwf2csv Fast conversion of a fwf file into a csv one

Description

Convert fixed width formatted file into a tab separated one.

Usage

fwf2csv(fwffile, csvfile, names, begin, end, verbose = getOption("verbose"))

Arguments

fwffile The fixed width format file.
csvfile The csv file to be created. The fields will be separated by tab characters and there will be no quotes around strings.
names A character vector with column names.
begin A numeric vector with the begin offset of values in the fixed width format file.
end A numeric vector with the end offset of values in the fixed width format file.
verbose Logical: if TRUE a message about the number of saved lines is printed.
Details

The return value is NULL, but cvsfile is created if the function is successful. The file is a text table with fields separated by tabular characters without quotes around the strings.

This function is useful if you have a very big fixed width formated file to read and read.fwf would be too slow. The C function that does the real job allocates a buffer of 32765 bytes to read the lines of the fixed width formated file, but it will allocate a larger buffer if there is at least one column to be read near the end of the line.

Value

NULL.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>

See Also

For an efficient way of reading a csv file, see the function ‘fread()’ from data.table package.

Examples

```r
## Not run:
tab <- rbind(c("state", 1, 2),
             c("municp", 3, 5),
             c("house", 6, 8),
             c("cond", 9, 9),
             c("sex", 10, 10),
             c("age", 11, 12),
             c("income", 13, 16))

fwf2csv("example.txt", "example.csv",
        names = tab[, 1],
        begin = as.numeric(tab[, 2]),
        end = as.numeric(tab[, 3]))
df <- read.table("example.csv", header = TRUE,
                 sep = "\t", quote = "")
```

## End(Not run)

### histkdnc

**Histogram with kernel density and normal curve**

Description

Plots a histogram with kernel density and normal curve.
**histkdnc**

**Usage**

```r
histkdnc(v, breaks = 0, include.lowest = TRUE, right = TRUE,
main = "Histogram with kernel density and normal curve",
xlab = deparse(substitute(v)), col = grey(0.90),
col.cur = c("red", "blue"), lty.cur = c(1, 1),
xlim = NULL, ylim = NULL, ...)
```

**Arguments**

- **v** The object from which the histogram is desired.
- **breaks** See `hist`.
- **include.lowest** See `hist`.
- **right** See `hist`.
- **main** See `hist`.
- **xlab** See `hist`.
- **col** See `hist`.
- **col.cur** Vector of size two with the colors of, respectively, kernel density and normal curve.
- **lty.cur** Vector of size two with line type of, respectively, kernel density and normal curve.
- **xlim** See `plot.default` and `hist`.
- **ylim** See `plot.default` and `hist`.
- ... Further arguments to be passed to `hist`.

**Details**

The function plots a histogram of the object `x` with its kernel density and a normal curve with the same mean and standard deviation of `x`.

**Value**

NULL.

**Author(s)**

Dirk Enzmann (modified by Jakson Aquino<jalvesaq@gmail.com>).
Conversion of specially written text file into R code

Description

Convert a specially written text file with information on variable labels and value labels into R code that converts integer vectors into factor variables.

Usage

labels2R(lfile, rfile, dfname = "b", echo = FALSE)

Arguments

- lfile: The path to the text file to be converted.
- rfile: The path to the file to be created.
- dfname: Name of data.frame where the variables are.
- echo: If TRUE, then lines of lfile are printed in the R Console while the file is parsed. This may be useful debugging.

Details

The return value is NULL, but rfile is created if the function is successful. The file is an R code that converts numeric vectors into factors. The text file must have a format as in the example below:

- v1 Sex
  1 Female
  2 Male

- v2 Household income

- v3 Taking all things together, would you say you are...
  1 Very happy
  2 Rather happy
  3 Not very happy
  4 Not at all happy

The above code would be converted into:

```r
b$v1 <- factor(b$v1, levels=c(1, 2), labels=c("Female", "Male"))
attr(b$v1, "label") <- "Sex"
attr(b$v2, "label") <- "Household income"
b$v3 <- factor(b$v3, levels=c(1, 2, 3, 4),
               labels=c("Very happy", "Rather happy",
                        "Not very happy", "Not at all happy"))
attr(b$v3, "label") <- "Taking all things together, would you say you are..."
```
**LogRegR2**

**Value**

NULL.

**Author(s)**

Jakson A. Aquino <jalvesaq@gmail.com>

---

<table>
<thead>
<tr>
<th>LogRegR2</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pseudo R2 of logistic regression</em></td>
</tr>
</tbody>
</table>

**Description**

The function calculates multiple R² analogues (pseudo R²) of logistic regression.

**Usage**

`LogRegR2(model)`

**Arguments**

- `model`: A logistic regression model.

**Details**

The function calculates McFaddens R², Cox & Snell Index, and Nagelkerke Index of a logistic regression model.

**Value**

A object of class `list` with the calculated indexes.

**Author(s)**

Dirk Enzmann
### plot.CrossTable

*Mosaic plot from object of class CrossTable*

#### Description

This function receives a `CrossTable` object as its main argument and produces a mosaicplot.

#### Usage

```r
## S3 method for class 'CrossTable'
plot(x, xlab, ylab, main = "", col,
     inv.x = FALSE, inv.y = FALSE, ...)
```

#### Arguments

- **x**: A object of class CrossTable.
- **xlab**: See `plot.default`.
- **ylab**: See `plot.default`.
- **main**: See `plot.default`.
- **col**: A specification for the default plotting color. (See section ‘Color Specification’ of `par`). If the argument is missing, a gray scale is used to make the plot easier to interpret.
- **inv.x**: A logical value indicating whether the order of the levels of the x variable should be inverted.
- **inv.y**: A logical value indicating whether the order of the levels of the y variable should be inverted.
- **...**: Further arguments to be passed to `mosaicplot`.

#### Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>

#### See Also

- `CrossTable`, `crosstab`
plot.freqtable

Bar plot from object of class freqtable

Description
This function receives a freqtable object as its main argument and produces a barplot.

Usage
```r
## S3 method for class 'freqtable'
plot(x, y.axis = "count", ...)
```

Arguments
- **x**: A object of class freqtable.
- **y.axis**: Character string, indicating what variable to use in the y axis, "count" or "percent", when plotting the frequency table.
- **...**: Further arguments to be passed to barplot.

Author(s)
Jakson A. Aquino <jalvesaq@gmail.com>

toUTF8

Conversion to UTF-8 encoding

Description
Converts the encoding of some attributes of an object to UTF-8

Usage
```r
toUTF8(x, from = "WINDOWS-1252")
```

Arguments
- **x**: A R object, usually a variable of a data frame or a data frame.
- **from**: A string indicating the original encoding. Common values are "LATIN1" and "WINDOWS-1252". Type iconvlist() for the complete list of available encodings.

Details
The function converts the attribute label of x from the specified encoding into UTF-8. If x is a factor, the levels are converted as well. If x is a data.frame, the function makes the conversions in all of its variables.
Value

The object with its label and levels converted.

Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>.

See Also

iconv

taxtable.CrossTableCrossTable method for xtable

Description

The method creates an object of class xtable.

Usage

## S3 method for class 'CrossTable'
taxtable(x, caption = NULL, label = NULL, align = NULL,
         digits = 1, display = NULL, multirow = FALSE, hline = FALSE, ...)

Arguments

x A object of class CrossTable.
caption See txtable.
label See txtable.
align See txtable.
display See txtable.
digits See round.
multirow A logical value indicating whether the command \multirow should be added to the table. See the Details section below.
hline A logical value indicating whether the command \hline should be added to the table. See the Details section below.
... Further arguments to be passed to format.

Details

If either multirow or hline is TRUE, the sanitize.text.function argument of print.xtable must be defined. You will also have to add \usepackage{multirow} to your Rnoweb document. See the Example section of crosstab.
Author(s)

Jakson A. Aquino <jalvesaq@gmail.com>

See Also

CrossTable, crosstab, print.xtable.
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